

by the action of the spirit" was *Gossea microdentopa*, Bate. I succeeded in extracting three specimens from a mass of fungus, and was rewarded by discovering that it was the same species as that described by Bate in the 'Catalogue of the Amphipoda in the British Museum' under the name of *Pherusa fucicola*, Leach, at p. 145, and again under *Gossea microdentopa* at p. 159. This therefore adds another to the list of synonyms given by me in Ann. & Mag. Nat. Hist. 1891, ser. 6, vol. vii. p. 421, under the name *Pherusa Jurinii*, M.-Edw. It will not, however, involve any alteration in the generic name *Apherusa* proposed by me (Ann. & Mag. Nat. Hist. 1891, vol. viii. p. 83), because a genus of Cœlenterata was named *Gossea* by Agassiz in the same year (1862) as Sp. Bate's was published. It is therefore obviously more convenient that Agassiz's genus should be retained.

Pherusa bicuspis.

This, as I have elsewhere* shown, is not *Amphithoë bicuspis*, Kröyer.

Nant-y-Glyn, Colwyn Bay,
December 9, 1891.

XIX.—On the Occurrence of the Genus *Equisetum* (*E. Hemingwayi*, Kidston) in the Yorkshire Coal-measures.
By ROBERT KIDSTON, F.R.S.E., F.G.S.

UNTIL the description of *Equisetum Monyi* from the Comentry Coal-field by MM. Renault and Zeiller †, there was no satisfactory record of the occurrence of the genus *Equisetum* in Palæozoic times ‡.

* 'Fauna of Liverpool Bay,' 2nd Report, p. 173; 'Proceedings of the Liverpool Biological Society,' vol. ii. p. 173.

† 'Comptes-rendus Acad. d. Sciences,' Paris, January 5, 1885. Also see Renault and Zeiller, "Études sur le terr. houill. d. Comentry: Flore fossile," part ii. p. 394, pl. lvii. fig. 7 (Bull. de la Soc. de l'industrie minière, 3^e sér. vol. iv. ii^e livr. 1890: St. Étienne).

‡ Several specimens from the Coal-measures have been described under the name of *Equisetites*, but none of these examples are sufficiently perfect to enable one to form any definite opinion as to their true systematic position.

Some have placed the *Equisetites mirabilis*, Sternb., in *Equisetum*. The *Equisetites lingulatus*, Germar, is another species whose systematic position is not satisfactorily determined.

The specimen described by these authors is a portion of a stem about 4 inches long and about $1\frac{1}{2}$ inch wide at the broadest part. It shows portions of thirteen nodes bearing the characteristic toothed sheath of *Equisetum*. The channelling on the stem is feebly shown, but each rib ends in a tooth.

The specimens I now describe, and one of which is here figured, show the fructification of an *Equisetum*. They were collected by Mr. W. Hemingway, by whom they were communicated to me.

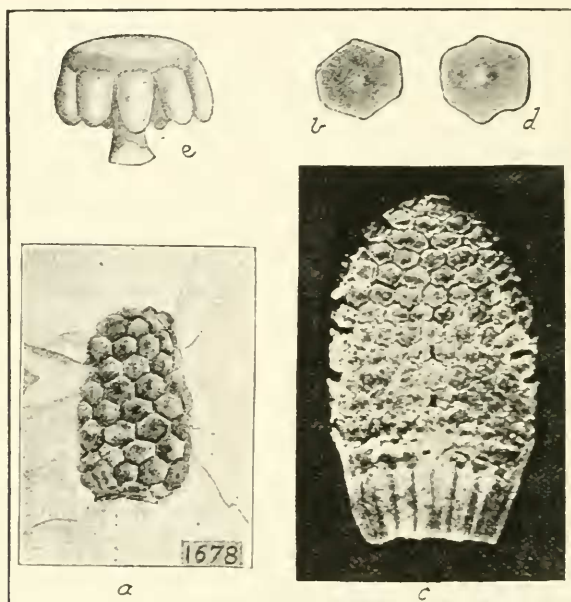
The first example of the fossil was received a couple of years ago, but the earlier specimens discovered were not well preserved and their true nature was not discerned. More recently I have received some fine specimens from Mr. Hemingway, which reveal the true character of the fossil.

The cones are about 1 inch long and a short distance above the base measure $\frac{6}{10}$ inch across. They are rounded at the base and have been attached to a thick stem, whose width can be ascertained by the concave fracture where the cone has separated from the stem. This "scar" shows that the top of the stem must have had a thickness of $\frac{3}{10}$ of an inch. From about a third above its base the cone gradually narrows upwards, and ends in a blunt apex about $\frac{4}{10}$ of an inch wide. The whole surface of the cone is covered with hexagonal plates whose diameter is from $\frac{2}{10}$ to $\frac{3}{10}$ of an inch. In the centre of these smooth plates is usually a slightly prominent point. There appear to be nine transverse rows of plates in the cone figured (woodcut fig. *a*).

On some of the other specimens the plates of the cone show three, seldom four, ridges running from the central point of the plate to the margin. These I believe to be due to shrinkage of the specimen before mineralization, and they do not occur on the specimen figured, which is the finest example I have seen.

For comparison I place beside the drawing of the fossil a figure of an immature cone of *Equisetum limosum*, Sm. (from which the sheath at the base has been removed), taken from a photograph of a herbarium specimen that has been compressed during drying. There is seen here in several of the plates the small central elevation, similar to what has been pointed out as occurring in the fossil (woodcut fig. *c*). Fig. *d* shows one of the peltate-shields of *Equisetum limosum* enlarged. Owing to the shrinkage of the cone in drying its hexagonal form is not so distinct as in the fresh state, but it exhibits the central point and the slight elevation of the margin of the peltate-shield. Fig. *b* gives one of the plates of

the fossil, also enlarged, whose similar characters are observable. To return to fig. *d*, the central tubercle indicates the point at which the peltate-shield is attached to its stalk; hence there is a greater thickness of tissue at this part, and in drying the peripheral portions of the shield shrink more, and, being unsupported underneath, fall below the level of the centre, and thus the central tubercle is formed. One of the peltate-shields is shown in profile at fig. *e**, which illustrates more fully their structure.



- a.* *Equisetum Hemingwayi*, Kidston. Nat. size.
b. Outer surface of one of the sporangiferous shields of *Equisetum Hemingwayi*. Enlarged.
c. Cone of *Equisetum limosum*, Sm. $\times 4\frac{1}{2}$; from a photomicrograph.
d. Outer surface of a sporangiferous shield of *Equisetum limosum*. Enlarged.
e. Sporangiferous shield of existing *Equisetum* seen in profile, to show central column and sporangia. Enlarged.

Now though the internal structure of the fossil cones is unknown, I think we are quite warranted in supposing that the central tubercle and slightly elevated margins of the plates

* From Maout and Decaisne, 'General System of Botany.' English ed. p. 904 (1873).

have been produced from similar causes. A comparison of figs. *d* and *b* almost demands this conclusion. Beyond evidence gained from an examination of the surface of the fossil there is none; but as all the characters exhibited on the outer surface of recent *Equisetum* occur on the fossils, I think I am quite justified in placing the Yorkshire specimens in the genus *Equisetum*.

It gives me pleasure to name this species after Mr. Hemingway, to whom I am much indebted for many interesting fossil plants from the Yorkshire Coal-field.

Before concluding these notes, I may add that the *Hippurites gigantea*, L. & H.*, from the Lower Coal-measures, Jarro Colliery, of which the type is preserved in the Hutton Collection, and which MM. Renault and Zeiller thought might possibly belong to the genus *Equisetum*, is a portion of a stem of *Calamitina* (probably *Calamitina varians*, var. *insignis*, Weiss), and has no very close affinity with the genus *Equisetum*. I have examined the type, and the leaves appear to spring from the node, not as teeth of a sheath, as represented on their plate, but as free and independent organs placed close together †.

Equisetum Monyi, R. & Z., came from the Upper Coal-measures, whereas *Equisetum Hemingwayi* originates from the Middle Coal-measures.

Loc. Monckton Main Colliery, near Barnsley, and Woolley Colliery, Darton, near Barnsley, Yorkshire.

Hor. Shale over the Barnsley Thick Coal, Middle Coal-measures.

XX.—Description of a new Frog from Burma.

By G. A. BOULENGER.

[Plate IX.]

Rana Oatesii.

Vomerine teeth in two strong oblique series between the choanæ, their outer extremities nearly touching the anterior corners of the latter. Head depressed, longer than broad by the distance between end of snout and nostrils; snout long, pointed, and projecting; canthus rostralis obtuse; loreal

* 'Fossil Flora,' vol. ii. pl. cxiv.

† See Proc. Roy. Phys. Soc. vol. x. p. 370.